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BRIEF NOTE

NEW RECORDS OF THE IOWA DARTER, *ETHEOSTOMA EXILE*, (PERCIDAE) IN OHIO[1]

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The Iowa darter (*Etheostoma exile*), a northern fish of cool waters, ranges throughout the Great Lakes and Upper Mississippi River basins. It reaches its southern limits east of the Mississippi River in Ohio, Indiana, and Illinois. Described by Trautman (1981) as a glacial relict in Ohio, the Iowa darter was found in the sheltered embayments of western Lake Erie, several of the larger canal and glacial lakes, and in the sluggish streams of northeastern Ohio. Increasing turbidity in Ohio's lakes and streams, a consequence of deforestation and intensive agriculture, along with stream channelization, dredging and other activities, has resulted in the widespread destruction of the clear waters and native beds of submerged aquatic vegetation required by *E. exile* and many other species. By the early 1970s, the Iowa darter was rare or had disappeared from many of its formerly known localities in Ohio, such as Buckeye Lake, Lake Erie, and the Cuyahoga and Chagrin Rivers. There were records at this time from only 2 locations in the state, both inland glacial lakes. Between 1978 and 1980, however, Iowa darters were reported from 3 other inland glacial lakes by independent researchers (table 1).

In light of these reports, we conducted surveys in Ohio glacial lakes during the fall of 1980 and spring of 1981 in an effort to locate previously unknown populations of Iowa darters and other Ohio endangered species having similar habitat requirements. Those glacial lakes where populations of these species were historically recorded were also seined in an effort to see if any of these populations still persisted.

Prior to the initiation of field work, a list of Ohio's glacial lakes was compiled using Bowell (1980) and scanning both county highway maps and 7.5-minute U.S. Geological Survey topographic maps. Approximately 100 lakes of glacial origin were identified in this manner. During the survey we were able to visit 75 of these lakes, of which 63 were judged to have suitable habitat and were seined.

All collections were made by shoreline seining using a 1.2-m by 2.4-m nylon net with .6-cm mesh and a double-weighted lead line. The extra weights were required to keep the seine on the bottom when going through beds of submerged aquatic vegetation. In those instances where the vegetation was too dense to seine through, it was necessary to set the seine in the vegetation and then kick back towards the seine in order to drive the fish into the net. Voucher specimens were retained from all locations representing new populations or reconfirming historic populations; all other specimens collected at a site were released. Specimens were fixed in 10% formalin and deposited at the Ohio State University Museum of Zoology (OSUM).

As a result of this survey, a total of 23 populations of Iowa darters were identified from lakes in 11 counties (table 2, fig. 1). Of these 23 populations, 16 were unknown for the state and their distribution includes 4 counties where *E. exile* previously was unreported. Of particular

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TABLE 1

Known populations of the Iowa darter (Etheostoma exile) *in Ohio lakes prior to 1980.*

Lake	County	Drainage Basin	Date Last Recorded	Source of Information
Lake Erie				
East Harbor	Ottawa	Lake Erie	1950	OSUM
Squaw Harbor	Ottawa	Lake Erie	1942	OSUM
Sandusky Bay	Ottawa	Lake Erie	<1950	Trautman 1981
Cedar Point	Erie	Lake Erie	<1950	Trautman 1981
N. Reservoir	Summit	Tuscarawas	1978	ODNR Dist. 3
Pippen	Portage	Cuyahoga	1900	Osburn 1901
Summit	Summit	Tuscarawas/ Cuyahoga	1900	Osburn 1901
W. Twin	Portage	Cuyahoga	1978	Orr KSU*
Punderson	Geauga	Cuyahoga	1980	OSUM
Nettle	Williams	St. Joseph	1963	Trautman 1981
Buckeye	Licking/ Fairfield	Licking	1948	Trautman 1981
Silver	Miami	Miami	1972	OSUM

*KSU = Kent State University

interest are the newly identified populations in Logan (5) and Clark (1) counties in west-central Ohio.

During these investigations, several other Ohio endangered fishes or fishes previously considered extirpated from the state were collected. These were the blackchin shiner (*Notropis heterodon*), taken at Nettle Lake in Williams Co.; the pugnose minnow (*N. emiliae*), also from Nettle Lake; the lake chubsucker (*Erimyzon sucetta*) from Round Lake in Ashland Co. and from Mud Lake and Nettle Lake in Williams Co.; and the western banded killifish (*Fundulus diaphanus menona*) from Crystal Lake in Summit Co.

From observations made during the course of this study, the habitat of the Iowa darter in Ohio, at least during the fall and winter months, can best be described as clear, shallow waters having a rather firm bottom and stands of rooted, submerged aquatics. Those rooted aquatics found most often in association with Iowa darters include species of *Potamogeton, Myriophyllum, Ceratophyllum* and *Chara.* Iowa darters were usually collected in water less than 1 m in depth and most frequently in waters 25–35 cm or less in depth. Collections were most often made in or near stands of the rooted aquatics listed above. Bottom types varied somewhat, but Iowa darters were most numerous where the bottom was relatively firm, composed of sand, gravel, or marl, and covered with no more than a 5–15-mm layer of organic debris. The lakes were relatively alkaline

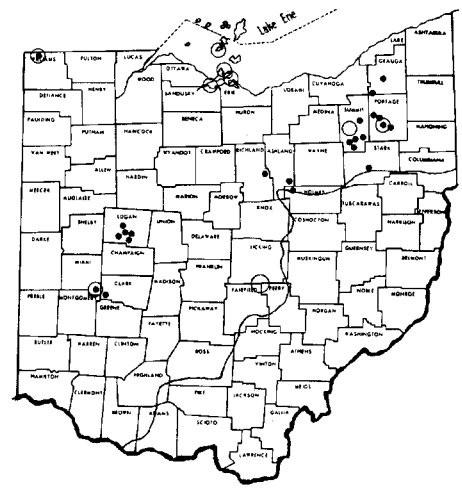

FIGURE 1. Recorded populations of *E. exile* in Ohio glacial lakes. Open circles represent populations recorded prior to 1955. Black dots represent populations found after 1978.

TABLE 2

Ohio glacial lakes supporting populations of the Iowa darter (Etheostoma exile).*

Lake	County	Approx. Area (ha)	Drainage Basin	Date Surveyed
Round	Ashland	10	Mohican	22 Oct. '80
Sites	Richland	3	"	20 Nov. '80
Long	Holmes	17	"	22 Oct. '80
Meyer's	Stark	53	Tuscarawas	2 Dec. '80
W. Twin	Portage	36	Cuyahoga	9 Dec. '80
E. Twin	"	26	"	9 Dec. '80
Crystal	"	32	Mahoning	8 Dec. '80
Pippen	"	57	Cuyahoga	25 Mar. '81
Long	Summit	71	Tuscarawas	19 Nov. '80
Turkeyfoot	"	127	"	13 Nov. '80
Crystal	"	10	Cuyahoga	20 Nov. '80
Springfield	"	79	"	20 Nov. '80
N. Reservoir	"	63	Tuscarawas	1978
Punderson	Geauga	40	Cuyahoga	5 Nov. '80
Geauga	"	20	"	7 Nov. '80
Nettle	Williams	37	St. Joseph	8 Oct. '80
Crystal	Clark	8	Miami	10 Nov. '80
Silver	Miami	5	"	8 Sep. '80
N. Twin	Logan	2	"	30 Sep. '80
S. Twin	"	2	"	27 Aug. '80
Doke	"	2	"	2 Oct. '80
McMillen	"	2	"	27 Oct. '80
Silver	"	14	"	6 Oct. '80

*Other glacial lakes (L.) surveyed where no Iowa darters were found include: Ashland Co., Spring L., Mud L., Metcalf L. and smaller connecting lake (unnamed); Champaign Co., Fudger L., Baker L., Brush L., Crane's Pond, Kiser L., Sayre's L.; Clark Co., Haddix L.; Geauga Co., L. Kelso, L. Aquilla, Bass L., Little Punderson L., Kiwanis L., Restful L.; Holmes Co., O'dell L.; Licking Co., Smoot L., Buckeye L.; Logan Co., Black L., Rushcreek L., Braden L., Ruby L., Newell L., Lemen L.; Medina Co., Chippewa L.; Portage Co., Aurora Pond, Brady L., Muzzy L., Collins Pond, Wingfoot L., Hodgson L., Sandy L.; Stark Co., Congress L., Sippo L.; Summit Co., L. Anna, Summit L., Bath Pond, Black Pond, White Pond, Yellow Pond, Shocalog L., L. Nesmith, Luna L., Silver L., Wyoga L., Alder Pond; Wayne Co., Dohner L., Brown's L.; Williams Co., Mud L.

with total alkalinities ranging from 100 to 300 ppm and pH's ranging from 7.2 to 8.5.

The status of the Iowa darter in Ohio is apparently not as bleak as previously reported (Smith et al. 1973). Our study documents viable populations from glacial pothole lakes in 14 counties. The majority of the lakes supporting Iowa darters are, however, in private ownership. Problems connected with the management and use of these pothole lakes were observed by the authors which adversely affected those habitats required by the Iowa darter. Common practices and conditions contributing to the alteration and destruction of these habitats are: aquatic weed control, accelerated eutrophication and siltation due to runoff from adjacent farm fields and lakeside developments, and alteration and modification of the natural shoreline for beaches, erosion control features, and other developmental purposes. If these factors can be controlled, the Iowa darter may remain a viable constituent of Ohio aquatic fauna.

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